# MULTIMEDIA UNIVERSITY

# FINAL EXAMINATION

### TRIMESTER 2, 2017/18

## TOS2581 – OPERATING SYSTEMS & INTERNETWORKING
### (All sections / Groups)

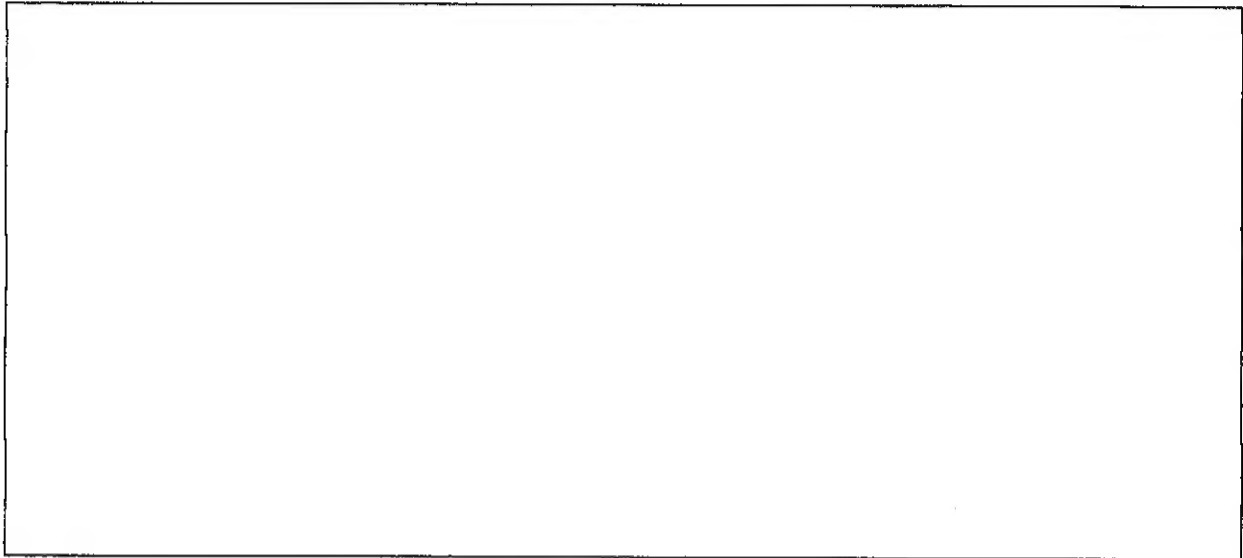8 March 2018
2:30pm – 4:30pm
(2 Hours)

**INSTRUCTION TO STUDENT**

1. This Question paper consists of 11 pages including cover page with 6 questions only.

2. Attempt **FIVE** out of six questions. All questions carry equal marks (12 marks) and the distribution of the marks for each question is given.

3. Please write all your answers in the spaces provided in this question paper.
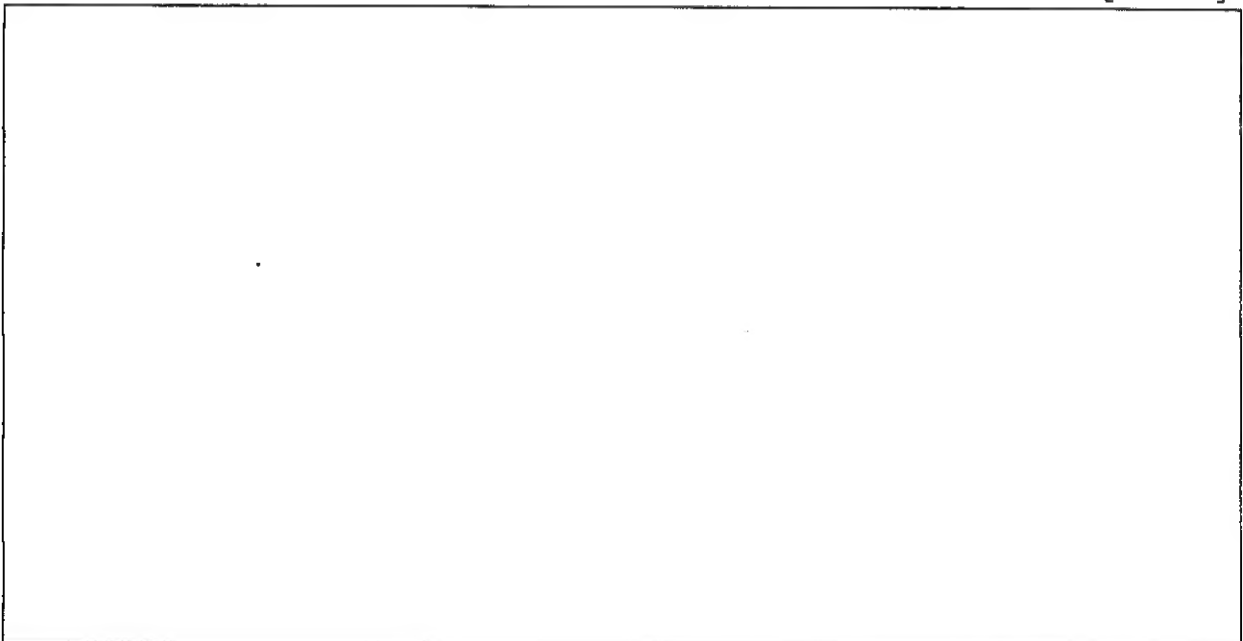
## Question 1

a) In computing, input/output or I/O is the communication between information processing system, such as a computer, and the outside world, possibly a human or another information processing system. List and briefly explain the SIX goals of I/O Software.

[6 marks]

b) List and briefly explain the characteristics of the TWO types of the Multiprocessor Operating System.
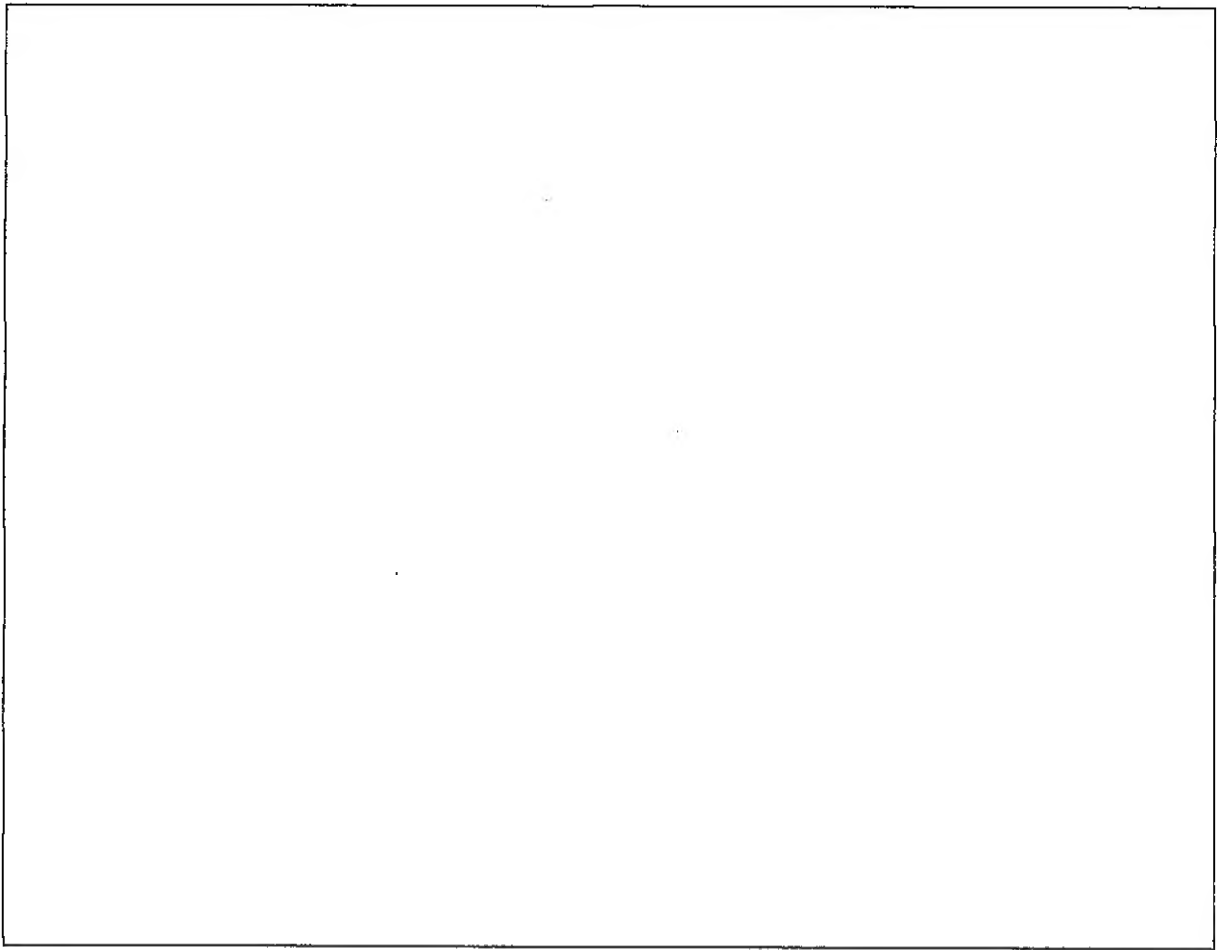
[6 marks]

*Continued....*

## Question 2

a) Networks were created initially to share expensive hardware resources. Operating software such as Network Operating System (NOS) and Distributed Operating System (DOS) were enhanced with network capabilities to give users easy access to centralized information resources. Describe the difference between Network Operating System (NOS) and Distributed Operating System (DOS).                    [4 marks]

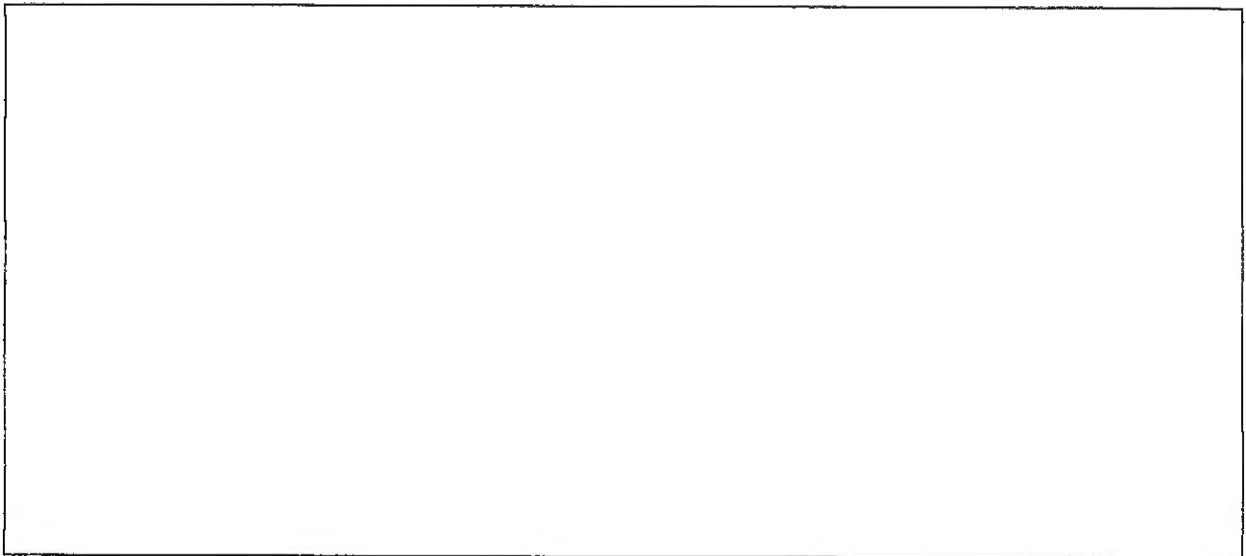b) Discuss **FOUR** reasons/motivations for building distributed systems.

[4 marks]

*Continued....*

b) Discuss any TWO advantages and TWO disadvantages of building distributed systems.

[4 marks]

*Continued....*

### Question 3

a)  Suppose that a disk drive has 1000 tracks, numbered 0 to 999. Assume that the drive is currently serving a request at track 555, and the head is moving towards track 0. The queue of pending requests, in FIFO order is
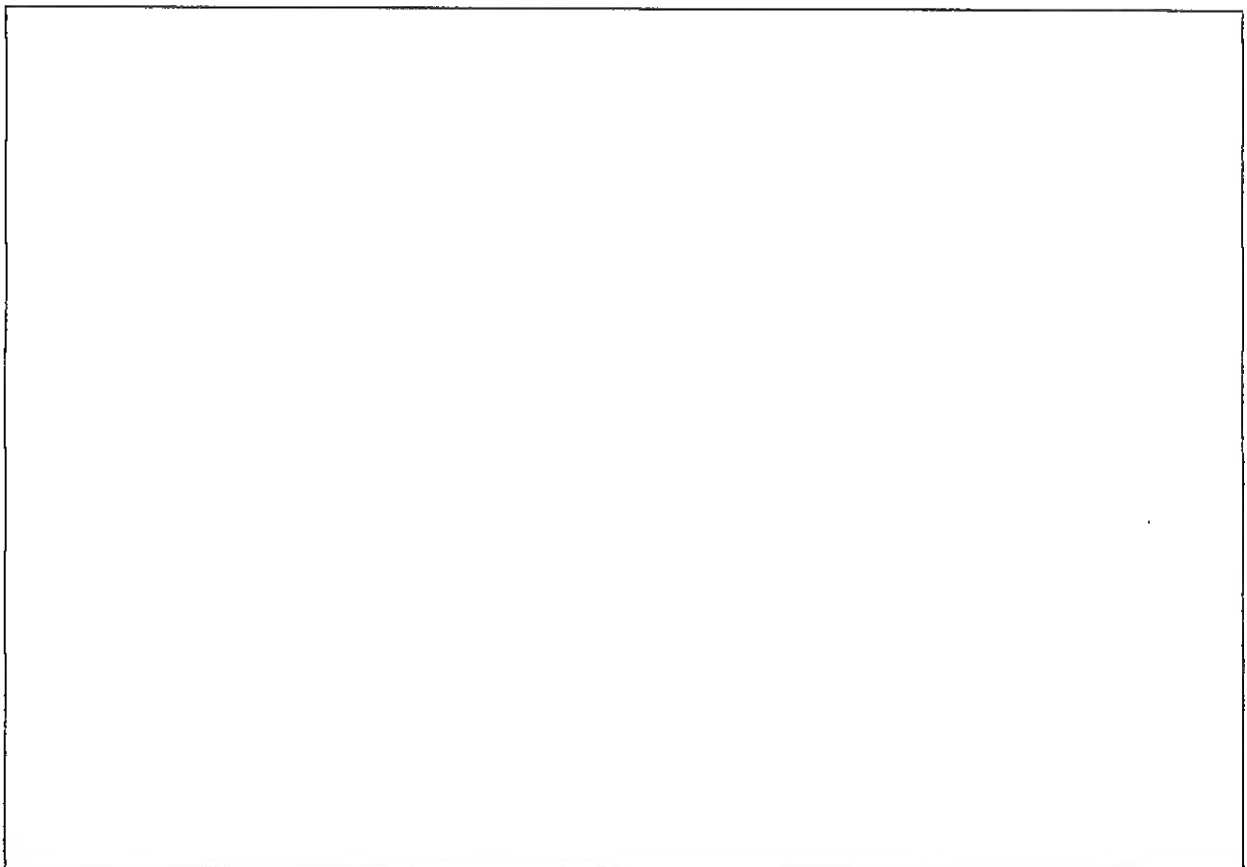
970, 111, 347, 744, 333, 866

Starting from the current head position, what is the total seek distance (in tracks) that the disk arm moves and the total seek time (in ms) required to satisfy all the pending requests, for each of the following algorithms? Assume the seek time required for traversing each track is 2 ms.

a. FIFO /FCFS
b. Shortest Service Time First (SSTF)
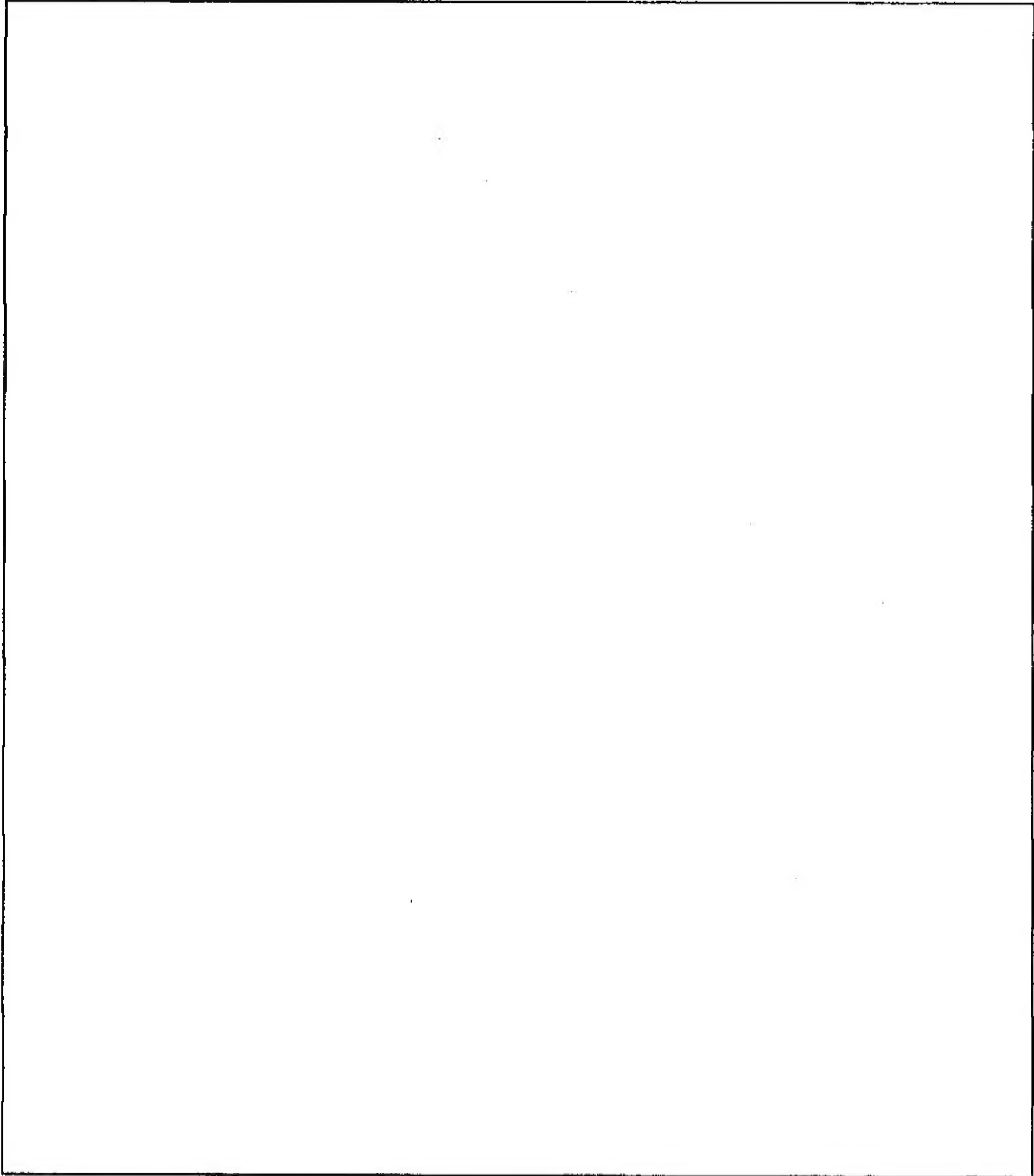
[4+4 marks]

*Continued....*

b) As packet arrival rate to link exceeds output link capacity, there is loss and delay in the packets queue in router buffers. List and explain **FOUR** sources of packet delay.

[4 marks]

*Continued....*

## Question 4

a) The transition from IPv4 to IPv6 must be smooth to prevent any problems between IPv4 and IPv6 systems. Illustrate the three transition strategies with diagrams.     [3 marks]

*Continued....*

b) Describe why multicast backbone (MBONE) is constructed and how it is operating in the Internet?     [4 marks]

c) List the major five features of IPv6, and give a short description of each.     [5 marks]

*Continued....*

## Question 5

a) Mr Ali sends out an email to support@rumah.com and at the same time he's also browsing the website www.rumah.com. The IP address for Rumah Sdn Bhd email server is 200.8.8.8 and the webserver address is 200.8.8.9. Explain how the TCP/IP protocols are able to differentiate and route the packet correctly, for example, email packet to 200.8.8.8 and http packet to 200.8.8.9.       [4 marks]

b) Describe how TCP Syn Attack is performed.       [2 marks]

c) Describe what is the use of UUCP protocol?       [2 marks]

*Continued....*

d) Name the policies that can prevent congestion and the policies that alleviate congestion.
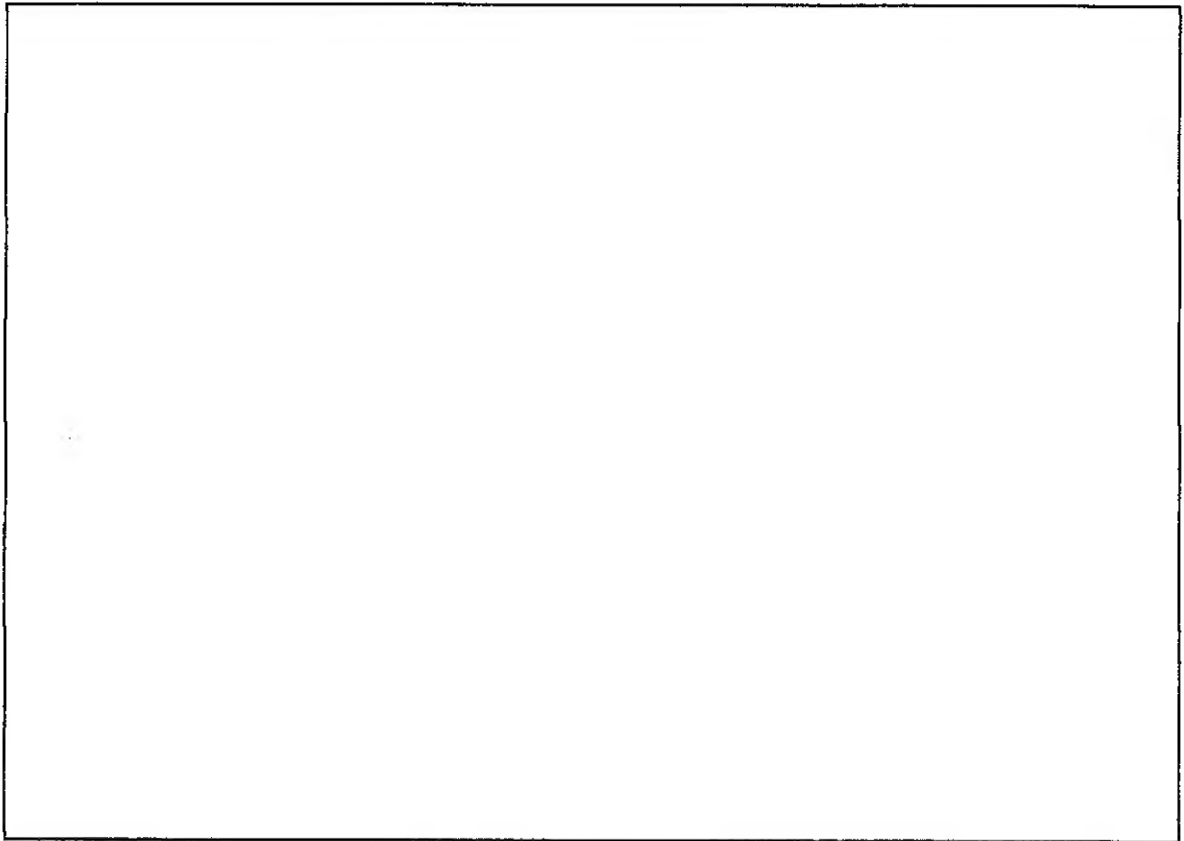
[4 marks]

## Question 6

a) Management on the Internet is done through the cooperation of the three protocols SNMP, SMI, and MIB. Discuss the role of each one of these three protocols    [3 marks]
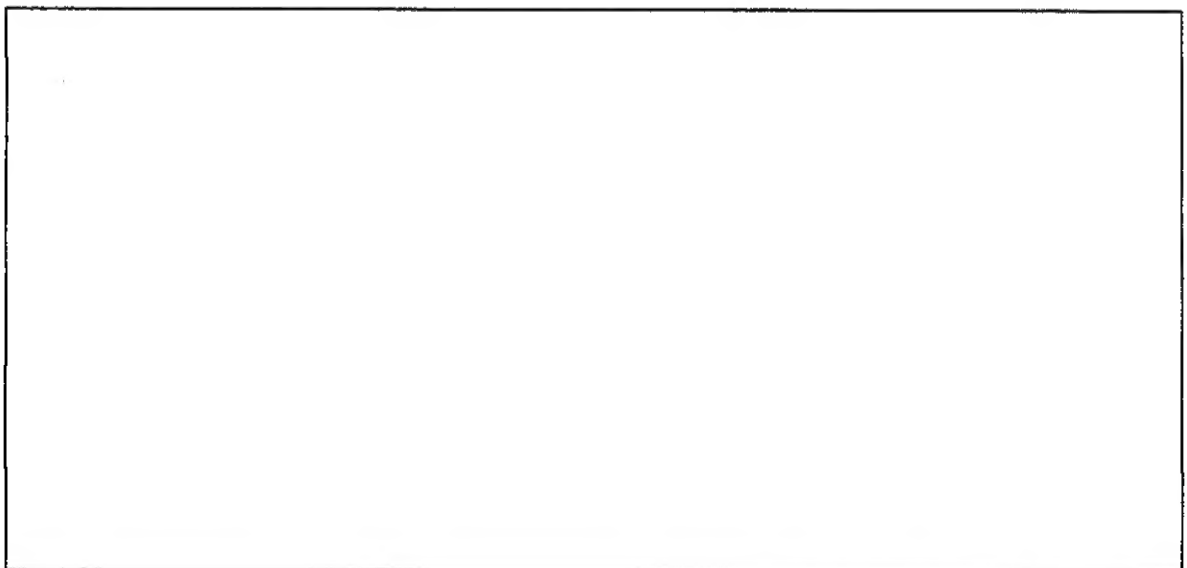
b) What are the FOUR main differences between packet filter firewall and proxy firewall?

[4 marks]

*Continued....*

c)  Discuss the two modes of IPSec protocol (*Transport* and *Tunnel* modes).        [2 marks]

d)  List the SIX major security problems on the Internet, and give a short description of each.
[3 marks]

**End of Paper**